



## PATENT COOPERATION TREATY

## PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>21132PCTJLNM</b>	<b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416	
International application No. <b>PCT/SE2003/000848</b>	International filing date (day/month/year) <b>26.05.2003</b>	Priority date (day/month/year) <b>03.06.2002</b>
International Patent Classification (IPC) or national classification and IPC <b>F01N 3/023, F02D 21/08</b>		
Applicant <b>STT Emtec AB et al</b>		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
  - a. ☒ (sent to the applicant and to the International Bureau) a total of 3 sheets, as follows:
    - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:
- |                                     |              |   |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I    | Basis of the report   |
| <input type="checkbox"/>            | Box No. II   | Priority  |
| <input type="checkbox"/>            | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |
| <input type="checkbox"/>            | Box No. IV   | Lack of unity of invention  |
| <input checked="" type="checkbox"/> | Box No. V    | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/>            | Box No. VI   | Certain documents cited   |
| <input type="checkbox"/>            | Box No. VII  | Certain defects in the international application  |
| <input type="checkbox"/>            | Box No. VIII | Certain observations on the international application   |

Date of submission of the demand <b>17.12.2003</b>	Date of completion of this report <b>16.07.2004</b>
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# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SE2003/000848

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1 - 11 as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- pages \_\_\_\_\_ as originally filed/furnished
- pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19
- pages\* 13 - 15 received by this Authority on 04 . 06 . 2004
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the drawings:
- pages 1 - 2 as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SE2003/000848

**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	<u>1 - 9</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1 - 9</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1 - 9</u>	YES
	Claims		NO

## 2. Citations and explanations (Rule 70.7)

Amended claims have been submitted.

The documents cited in the International Search Report represent the prior art. The claimed invention stated in claims 1 - 9 is not anticipated by these documents. None of the documents or any relevant combination of them reveals a device, a method, and an use of the device as described by these claims.

According to the arguments stated above, the invention claimed in claims 1 - 9 is novel and considered to involve an inventive step. The industrial applicability of the claimed invention is obvious.

Claims

1. A device for purifying exhaust gases from a combustion engine (1), comprising an arrangement (30) for recirculating exhaust gases from the engine to an air intake (2) thereof, a valve device (12) controlled by a control device (13) for regulating the relation between fresh air and recirculated exhaust gases supplied to the engine, and a regenerable filter (8) adapted to catch particulate constituents of the exhaust gases, characterized in that the device comprises means (14) for recording the temperature of the exhaust gases from the engine, and that the control device (13) is adapted to be supplied with temperature information from said temperature recording means (14), the control device (13) being adapted, with the aid of this temperature information and the valve device (12), to regulate the relation between fresh air and recirculated exhaust gases supplied to the engine so as to achieve a composition of the exhaust gases from the engine that is favourable with respect to the regeneration of the filter (8).
2. A device according to claim 1, characterized in that the control device (13) is adapted, with the aid of said temperature information and the valve device (12), to regulate the relation between fresh air and recirculated exhaust gases supplied to the engine so that a regeneration of the filter (8) will take place at the prevailing temperature level of the exhaust gases.
3. A device according to claim 1 or 2, characterized in that the control device (13) is adapted, with the aid of said temperature information and the valve device (12), to regulate the relation between fresh air and recirculated exhaust gases supplied to the engine so as to achieve a relation between  $\text{NO}_x$  and soot of the exhaust gases from the

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engine that is favourable for the regeneration of the filter (8).

4. A device according to claim 3, characterized in that the device comprises means (7) for converting NO occurring in the exhaust gases into NO<sub>2</sub>.
5. A device according to claim 4, characterized in that said converting means comprises a catalyst (7) capable of converting NO into NO<sub>2</sub>, which is arranged upstream of the filter (8).
6. A device according to claim 4 or 5, characterized in that said converting means comprises a catalytic material capable of converting NO into NO<sub>2</sub>, which material is integrated in the filter (8).
7. A device according to anyone of the preceding claims, characterized in that the filter (8) comprises a catalytic material capable of lowering the temperature at which particulate constituents deposited in the filter are ignited and combusted.
8. A method for regulating the relation between supplied fresh air and recirculated exhaust gases of a combustion engine (1) which comprises an arrangement (30) for recirculating exhaust gases from the engine to an air intake (2) thereof, a valve device (12) controlled by a control device (13) for regulating the relation between fresh air and recirculated exhaust gases supplied to the engine and a regenerable filter (8) adapted to catch particulate constituents of the exhaust gases, characterized in that the temperature of the exhaust gases from the engine is recorded, and that the control device (13) is supplied with information regarding said temperature, the control device (13) regulating, with the aid of this temperature information and

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the valve device (12), the relation between fresh air and recirculated exhaust gases supplied to the engine so as to achieve a composition of the exhaust gases from the engine that is favourable with respect to the regeneration of the filter.

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9. A method according to claim 8, characterized in that the control device (13), with the aid of said temperature information and the valve device (12), regulates the relation between fresh air and recirculated exhaust gases supplied to the engine so that a regeneration of the filter (8) will take place at the prevailing temperature level of the exhaust gases.
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10. A method according to claim 8 or 9, characterized in that the control device (13), with the aid of said temperature information and the valve device (12), regulates the relation between fresh air and recirculated exhaust gases supplied to the engine so as to achieve a relation between NO<sub>x</sub> and soot of the exhaust gases from the engine that is favourable for the regeneration of the filter (8).
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11. Use of a device according to anyone of claims 1-7 for purifying exhaust gases from a diesel engine.

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